

REMARKS***Summary of the Amendment***

Upon entry of the above response, claims 1 – 30 will remain pending.

Summary of the Official Action

In the instant Office Action, the Examiner has rejected the claims over the art of record. By the present remarks, Applicants submit that the rejections have been overcome, and respectfully request reconsideration of the outstanding Office Action and allowance of the present application.

Request for Indication Drawings are Acceptable

Applicants submitted Replacement Sheets with their previous response, but the Examiner has not yet indicated that the drawings are acceptable. As the Examiner has not maintained his previous objection, nor has the Examiner indicated that the Replacement Sheets are unacceptable, Applicants understand that the drawings are acceptable.

Accordingly, Applicants request confirmation of the same in the next official communication.

Traversal of Rejection Under 35 U.S.C. §103(a)***1. Over Kugimiya in view of Kohno***

Applicants traverse the rejection of claims 1, 2, 4, 6 – 26, and 28 – 30 under 35 U.S.C. §103(a) as being unpatentable over KUGIMIYA (U.S. Patent No. 4,547,073) in view of KOHNO (U.S. Patent No. 4,705,940). The Examiner asserts that KUGIMIYA shows all of the recited features except for a structured mask, but that it would have been obvious to utilize such a mask, as taught by KOHNO. Applicants traverse the Examiner's assertions.

Applicants' independent claim 1 recites, *inter alia*, a *collimating concave mirror*

structured and arranged *to produce a parallel beam* and to direct the parallel beam to a sample to be investigated, a structured mask located between said light source and said concave mirror, and an image sensor structured and arranged to receive a beam reflected from the sample and said concave mirror, wherein relative positions of said mask and said sensor to other elements of the apparatus are chosen to provide an essentially sharp image of the mask on the sensor. Further, Applicants' independent claim 23 recites, *inter alia*, directing light through a structured mask onto a concave mirror, directing *collimated light to a sample* to be investigated, receiving a beam reflected from the sample and the concave mirror, and positioning the mask and the sensor in relation to the mirror and the sample to provide an essentially sharp image of the mask on the sensor. Applicants submit that no proper modification of KOHNO teaches or suggests at least the above-noted features of the invention.

Applicants note that KUGIMIYA discloses a process and device for examining the surface of a polished semiconductor wafer. According to KUGIMIYA, light from a light source 11 is emitted through a pin hole 12 through a convergence lens 23 to produce parallel rays 231 projected onto a polished surface 131 of substrate 13 to be examined.

In contrast to KUGIMIYA, KOHNO discloses a process and device for projecting a mask onto a wafer. In this regard, light is transmitted through the mask and focused upon the wafer surface.

Because KUGIMIYA is directed to a system in which the entire surface is examined for flaws, Applicants find no teaching or suggestion for focusing a mask onto the surface of the wafer to block the incident light. That is, as the mask of KOHNO would effectively block areas of the wafer surface from examination, Applicants submit that the asserted

combination of documents prevents KUGIMIYA from operating in its intended manner, since areas of the wafer could not be tested as desired.

Because the asserted combination would render KUGIMIYA less effective and not suitable for its intended purpose, Applicants submit that the art of record fails to provide the necessary motivation or rationale for modifying KUGIMIYA in the manner asserted by the Examiner.

Moreover, Applicants submit that the art of record fails to provide any teaching or suggestion that the use of a mask in conjunction with the examination process of KUGIMIYA would facilitate the testing process. Thus, for these additional reasons, Applicants submit that the art of record fails to suggest the requisite motivation or rationale for modifying KUGIMIYA to include the mask of KOHNO, as asserted by the Examiner.

In fact, Applicants submit that the only reasonable rationale for modifying KUGIMIYA in the manner asserted by the Examiner is found in Applicants' own disclosure, which is an impermissible use of hindsight.

Accordingly, Applicants submit that independent claims 1 and 23 are allowable over the art of record.

Further, Applicants submit that claims 2, 4, 6 – 22, 24 – 26, and 28 – 30 are allowable at least for the reason that these claims depend from allowable base claims and because these claims recite additional features that further define the present invention. In particular, Applicants submit that no proper combination of KUGIMIYA in view of KOHNO teaches or suggests, *inter alia*, the samples comprise semiconductor wafers and other mirror-like surfaces, as recited in claim 2; said concave mirror comprises an off-axis parabolic mirror, as recited in claim 4; said image sensor comprises a CCD image sensor,

as recited in claim 6; a converging lens positioned in front of said light source to be in a beam path, as recited in claim 7; said light source comprises a laser and a converging lens structured and arranged to provide a diverging beam, as recited in claim 8; said light source comprises a laser with a built-in converging lens that is structured to provide a diverging beam, as recited in claim 9; one of a converging and a diverging lens positioned in front of said sensor to be in a beam path, as recited in claim 10; at least one flat mirror is positioned between said light source and said concave mirror to fold an optical path, as recited in claim 11; at least one of said at least one mirror comprises a partially transmitting mirror, as recited in claim 12; at least one of the at least one mirror is a semi-transparent mirror, as recited in claim 13; at least one flat mirror is positioned between the sample and said concave mirror to fold an optical path, as recited in claim 14; at least one of said at least one mirror comprises a partially transmitting mirror, as recited in claim 15; at least one of said at least one mirror comprises a semi-transparent mirror, as recited in claim 16; at least one flat mirror is positioned between said sensor and said concave mirror to fold an optical path, as recited in claim 17; at least one of said at least one mirror comprises a partially transmitting mirror, as recited in claim 18; at least one of said at least one mirror comprises a semi-transparent mirror, as recited in claim 19; a computer coupled to said sensor, said computer comprising an algorithm to calculate a height of a given point of the sample from a position of an image point on said sensor, as recited in claim 20; a process for fast, quantitative, non-contact topographic investigation of a sample in the apparatus, as recited in claim 21; calculating the height of a given point of the sample from a position of an image point on the sensor, as recited in claim 22; the samples comprise semiconductor wafers and other mirror-like surfaces, as recited in claim 24; a light source

is arranged to produce light, as recited in claim 25; the concave mirror comprises an off-axis parabolic mirror, as recited in claim 26; the image sensor comprises a CCD image sensor, as recited in claim 28; converging the beam before the mask, as recited in claim 29; and folding an optical path between the sample and the mirror, as recited in claim 30.

Accordingly, Applicants request that the Examiner reconsider and withdraw the rejection of claims 1, 2, 4, 6 – 26 and 28 – 30 under 35 U.S.C. §103(a) and indicate that these claims are allowable.

2. Over Kugimiya in view of Kohno and further in view of PAPI

Applicants traverse the rejection of claims 3, 5, and 27 under 35 U.S.C. §103(a) as being unpatentable over KUGIMIYA in view of KOHNO and further in view of the prior art of the present invention (Figures 1 – 3) [hereinafter “PAPI”]. The Examiner asserts that the asserted combination of KUGIMIYA in view of KOHNO shows all of the recited features except for a light source formed as a point source, but that it would have been obvious to do so in view of the teaching of PAPI. Applicants traverse the Examiner’s assertions.

Applicants note that while Figures 1 – 3 of the PAPI show a point light source, PAPI fails to teach or suggest the subject matter noted above as deficient in any proper combination of KUGIMIYA and KOHNO. Moreover, Applicants submit that PAPI fails to provide any teaching or suggestion that it would have been obvious to modify the examination process of KUGIMIYA to include projecting a mask, such as taught by KOHNO, and that PAPI fails to provide any teaching or suggestion that it would have been obvious to block portions of the surface under examination, as suggested by the Examiner in the pending rejection

Thus, Applicants submit that the additional teaching of PAPI fails to cure the above-

noted defect in the previous rejection of at least independent claims 1 and 23 over KUGIMIYA in view of KOHNO, and the art of record fails to disclose the necessary motivation or rationale for properly combining the art of record in the manner asserted by the Examiner.

Thus, Applicants submit that independent claims 1 and 23 are allowable over any proper combination of KUGIMIYA in view of KOHNO and further in view of PAPI.

Further, Applicants submit that claims 3, 5, and 27 are allowable at least for the reason that these claims depend from allowable base claims and because these claims recite additional features that further define the present invention. In particular, Applicants submit that no proper combination of KUGIMIYA in view of KOHNO and further in view of PAPI teaches or suggests, *inter alia*, said light source comprises substantially a point source, as recited in claim 3; said structured mask comprises a quadratic grid, as recited in claim 5; and the structured mask comprises a quadratic grid, as recited in claim 27.

Accordingly, Applicants request that the Examiner reconsider and withdraw the rejection of claims 3, 5, and 27 under 35 U.S.C. §103(a) and indicate that these claims are allowable.

Application is Allowable

Thus, Applicants respectfully submit that each and every pending claim of the present invention meets the requirements for patentability under 35 U.S.C. §§ 102 and 103, and respectfully request the Examiner to indicate allowance of each and every pending claim of the present invention.

Authorization to Charge Deposit Account

The undersigned authorizes the charging of any necessary fees, including any

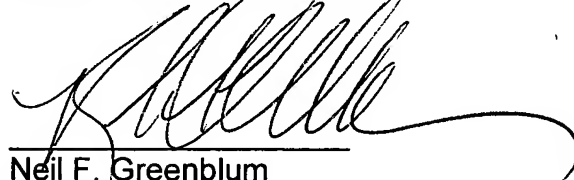
- extensions of time fees required to place the application in condition for allowance by Examiner's Amendment, to Deposit Account No. 19 - 0089 in order to maintain pendency of this application.

CONCLUSION

In view of the foregoing, it is submitted that none of the references of record, either taken alone or in any proper combination thereof, anticipate or render obvious the Applicants' invention, as recited in each of claims 1 – 30. The applied references of record have been discussed and distinguished, while significant claimed features of the present invention have been pointed out.

Accordingly, reconsideration of the outstanding Office Action and allowance of the present application and all the claims therein are respectfully requested and now believed to be appropriate.

Respectfully submitted,
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